POSTER SESSION

1152 Endothelium, Diabetes, and Atherosclerosis

Tuesday, March 19, 2002, 9:00 a.m.-11:00 a.m.
Georgia World Congress Center, Hall G
Presentation Hour: 9:00 a.m.-10:00 a.m.

1152-89 Phytoestrogens Have a Potentially Adverse Effect on Coronary Vasodilator (Endothelial Independent) Function in Women With Suspected Ischemia: A Report From the NHLBI-Sponsored Women's Ischemia Syndrome Evaluation (WISE) Study

B. Delia Johnson, Susan P. McGorray, Carl J. Pepine, Gregory O. von Mering, Sheryl F. Kelsey, Richard A. Kerensky, Gerald Pohost, William J. Rogers, Nathaniel Reichek, Steven E. Reis, George Sopko, C. Noel Bairey Merz, *University of Pittsburgh, Pittsburgh, Pennsylvania.*

Background. Prior studies suggest that dietary soy supplementation has beneficial effects on blood pressure and lipids, but the relationship of blood phytoestrogen levels with endothelial function has not been investigated in humans. **Methods.** We studied 106 women with complete blood phytoestrogen, estradiol, and provocative coronary endothelial function assessments, enrolled in the WISE study for suspected myocardial ischemia. Mean age was 56 (31-76) years, 79% were postmenopausal, 94% had chest pain, and 24% had CAD (≥50% stenosis in ≥1 coronary artery). Blood phytoestrogen assays for daidzein and genistein used liquid chromatography. Coronary artery endothelial function was measured as ratios of Average Peak Velocity (APV) and Volumetric Flow Reserve (VFR) to adenosine (ADO), acetylcholine (ACH), or nitroglycerine (NTG) over baseline. **Results.** Genistein was significantly negatively correlated with APV and VFR response to ADO (Spearman r= -.44, p=.0001 and r= -.40, p=.0006 respectively) but not to ACH or NTG. There were no significant correlations for daidzein. Analysis by terciles (table) shows that high blood genistein levels are consistently related to reduced endothelial function as compared to women in the lower terciles. **Conclusion.** Among women with suspected myocardial ischemia, higher blood levels of the phytoestrogen genistein appear to be associated with reduced coronary flow reserve as well as NTG vasodilator function but not endothelial function assessed by ACH.

Mean (± SD) Av. Peak Velocity (APV) and Volum. Flow Resrve (VFR) by Genistein Terciles

Endothelial Function Measure	Low Genistein (0-2.49 ng/ml) n=35	Med. Genistein (2.5-6.0 ng/ml) n=35	High Genistein (6.1+ ng/ml) n=36	High tercile vs. others (Rank Sums) p
APV_ADO	2.9 ± .9	2.7 ± .7	2.1 ± .5	0.0001
APV_ACH	1.7 ± .8	2.0 ± .9	1.4 ± .4	0.04
APV_NTG	2.4 ± .6	2.3 ± .6	2.0 ± .6	0.03
VFR_ADO	2.8 ± 1.1	2.7 ± .7	1.9 ± .6	0.0001
VFR_ACH	1.6 ± .6	1.8 ± .9	1.4 ± .5	0.36
VFR_NTG	3.1 ± 1.1	3.0 ± 1.0	2.4 ± .6	0.01

1152-90 Brachial Artery Endothelial Function Predicts Coronary Endothelial Function and Severity of Coronary Lesion in Patients With Suspected Coronary Artery Disease

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Background: Endothelial function (ECF) in brachial artery (BA) could be a good marker for coronary artery (CA) ECF and/or the severity of coronary artery disease (CAD). Flow-mediated vasodilation (FMD) in BA using ultrasound is widely used for ECF while BA flow response to acetylcholine infusion (Ach) is conventional method for ECF in BA. Methods: To investigate the role of ECF in BA in suspected CAD, we studied (1) the relationship between BA and CA in FMD in 15 patients (pts, 57±8 y/o) with suspected CAD, (2) the relationship of between BA and CA in Ach response in 57 pts (60±10 y/o) with suspected CAD in different three doses of Ach (7.5, 15, and 30 μg/min for BA; 10^{-8}, 10^{-7}, 10^{-6M} for CA) using Doppler Flowire and angiography and (3) the comparative predictive value of FMD in BA and carotid artery intimal media thickness (IMT) for detecting severity of CAD expressed as coronary stenosis index (CSI) calculated from coronary angiography in 81 pts (62±9 y/o) with suspected CAD. **Results:** There was a strong correlation between FMDs in CA and BA (r=0.78, p<0.001). Also, a strong correlation between blood-flow response to Ach in BA and CA was observed in both CAD and non-CAD pts, only at middle and high dose of Ach (CAD, r=0.64, non-CAD, r=0.87, p<0.001, 15 μg/min vs 10^{-7M}; CAD, r=0.68, non-CAD, r=0.72, p<0.001, 30 μg/min vs 10^{-6M}). Both FMD and IMT showed significant and almost identical correlation with CSI (r= -0.67, p<0.01; r= 0.69, p<0.01, respectively). **Conclusions:** FMD in BA using ultrasound and BA blood-flow response to optimal Ach doses can be used as a surrogate for CA endothelial function. For detecting the severity of CAD, FMD in BA has similar predictive power to IMT in carotid artery in pts with suspected CAD.

1152-91 Low Dose Hormone Replacement Therapy Improves Endothelium-Dependent Vasodilator Responsiveness Comparable to Conventional Dose in Postmenopausal Women

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Background: We have previously shown that conventional dose hormone replacement therapy (C-HRT) improved endothelium-dependent vasodilator responsiveness in postmenopausal women (PMW). The effects of low-dose hormone replacement therapy (L-HRT) has not yet been observed.
Methods: We administered micronized progesterone (MP) 100 mg with conjugated equine estrogen (CEE) 0.625 (C-HRT) or 0.3 (L-HRT) mg daily for 2 months to 20 PMW with a washout period of 2 months in a randomized, double-blind, crossover study. Data= mean±SD. *=P<0.05, **=P<0.01, ***=P<0.001 vs. Baseline. Lipoproteins (mg/dl)
Results: L-HRT and C-HRT significantly changed lipoprotein levels and improved brachial artery flow-mediated dilation (FMD) compared with respective baseline levels. However, there were no significant differences between L-HRT and C-HRT regarding these effects.
Conclusion: L-HRT has comparable effects to C-HRT in PMW regarding lipoproteins and FMD.

	Baseline1	C-HRT	Baseline2	L-HRT
17b-Estradiol	33¡¾24	109¡¾54***	28¡¾19	74¡¾74*
LDL-Cholesterol	138¡¾36	110¡¾32**	137¡¾27	118¡¾25*
HDL-Cholesterol	55¡¾12	60¡¾12*	57¡¾12	59¡¾13
FMD (%)	4.80¡¾1.26	7.14¡¾1.75***	4.93¡¾1.23	6.40¡¾1.64***

1152-92 Diabetes Is the Most Prevalent Risk Factor for Premature Vascular Disease in Migrant Asian Indians

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During the past decade, an increasing number of Asian Indian migrants have been noted to suffer from premature vascular disease (VD)and coronary artery disease (CAD). The precise reason for this increase in the incidence of VD is not known. Some small-scale studies have evaluated the role of various traditional risk factors in these pts and the data suggest that most Asian Indian patients with CAD do not have traditional risk factors such as smoking, hypertension, or hypercholesterolemia. However, little information is available from systematic evaluation and comparison of risk factors in patients with premature CAD and their siblings without CAD living in the same environment. Accordingly, we prospectively compared the prevalence of traditional risk factors in 72 patients with confirmed diagnosis of premature MI (<50 yrs of age) with 50 siblings of the probands who were free of CAD in the Natal Province of South Africa. The table below shows the parameters with significant difference and the lipid profile. Overall, the results showed significantly higher prevalence of diabetes in patients with premature CAD compared to their siblings without CAD (39% vs. 14%, p<.001).
CONCLUSION: The results of this case control study show that, although Asian Indian patients with premature VD/CAD do not have typical lipid abnormalities, they have an extremely high prevalence of diabetes, which predisposes them to high risk of vascular disease.

	Cases	Control	P Value
Height (cm)	168±9	163±10	.002
Waist/hip ratio	0.95	0.91	.01
Systolic BP	131±23	123±17	.03
Diastolic BP	77±15	71±11	.03
Fasting glucose	139±65	104±26	<.0001
Serum cholesterol	197±46	198±37	NS
LDL cholesterol	126±42	115±39	NS
HDL cholesterol	47±18	47±12	NS

1152-93 Differences In Endothelial Function Between Patients With Ischemic and Dilated Heart Failure

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Background: Recently, a degree of endothelial dysfunction has been demonstrated in patients with heart failure. In this study we investigated the differences in endothelial function in patients with coronary artery disease (CAD) without heart failure, in patients with ischemic heart failure and in patients with dilated heart failure without underlying coronary artery disease.
Methods: In this study were included 14 male patients with CAD (57.8±3.5 years old) (group A), 23 male patients (68.1+/-1.2 years old) with ischemic heart failure (group B) and 10 male patients (57.86+/-3.6 years old) with dilated cardiomyopathy without underlying coronary artery disease (group C). Forearm blood flow was measured using venous occlusion strain-gauge plethysmography. Endothelium dependent flow mediated vasodilation (FMD) was expressed as the % change from baseline to post reactive hyperemia blood flow. Endothelium independent flow (NTG%) was assessed as the % change from baseline to post sublingual nitroglycerin administration flow. Ejection fraction (EF) of the left ventricle was estimated with Simpsons method. All patients in group B and C were NYHA II to IV having an ejection fraction <40%. All values are expressed as mean±SEM.